The Treatment of Tuberculosis

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Reprinted from
Journal of the Outdoor Life
February, 1922, vol. XIX, p. 31-33

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By ALLEN K. KRAUSE, M.D.

REST remains the sovereign remedy for tuberculosis. More direct and spectacular methods of treatment — inhalations, injections, drugs by mouth—come and go: the years since 1900 have spawned hundreds of them. Few have survived the momentary sensation of their announcement: none has earned even a vogue: all this despite the fact that none has been employed unless rest were also a part of the treatment. Rest alone has returned thousands of consumptives to productive life. Of those who, *while living an active life,* relied on drugs or vapors or "serums" or vaccines to fight their battle, few have made the journey back.

The lungs are the most frequent seat of human tuberculosis. In this type of disease the body is, as a rule, profoundly affected. Besides the cough, bleeding and sputum which are directly due to the local activities of the infection, the patient may exhibit the more general and constitutional symptoms of fever, loss of endurance, dyspepsia, loss of weight, excessive nervous irritability, etc. These latter manifestations are all expressions of a poisoning from which the body is suffering, because of noxious substances absorbed from the diseased (tuberculous) areas in the lungs. All sound treatment must aim to limit and confine the activities of these tuberculous foci and to reduce to zero or a minimum the absorption of harmful focal products.

Foci of disease represent morbid tissue changes set up in the lungs by living germs, so-called *tubercle bacilli.* In several ways and by several avenues and at many times, tubercle bacilli may be carried from foci, which they have brought about, to other parts of the lungs or body. Wherever conditions are favorable for their lodgment and continuance of life and multiplication, they will arouse the production of new foci of disease. *Progressive* tuberculosis, therefore, is an infection, characterized by successive eruptions of newer and newer areas of disease — tuberculous foci (tubercles)—which result from the translocation of living tubercle bacilli from point to point in the body.

Fortunately, not all tuberculosis is continuously progressive. Indeed, it is only the very rare cases which are. In most human beings, the infection proceeds to a certain degree and then stops; and, if it is not of a size or character to arouse symptoms of illness or disability, its possessor may never become aware of it. In many the infection pursues a halting course. Active for a while, it may enter into a period of quiescence, which may continue for weeks, months or even years. But at any time the stress of many outside influences and human experiences may "stir" quiesent foci into renewed activity; and at any point the activity may become sufficient to bring about symptoms of illness. When these symptoms occur, the person becomes then a patient who requires treatment.

If we possessed a chemical compound or a specific bacterial preparation (one comparable to the antitoxin for diphtheria), and with it could reach the foci of disease in such a way that it would destroy all tubercle bacilli contained therein, or neutralize and make impotent the harmful substances which poison the body, our treatment would be simple, and swift and certain in good results. An enormous amount of study and experimentation has, however, thus far completely failed to disclose such short cuts to healing. Our problem to-day is to convert a progressive disease process into one which is subsiding or non-progressive, and to prevent the spread of bacilli from already present foci into healthy tissues.

Experimental research, as well as elementary experience, teaches us that nothing so promotes the natural healing of a diseased or injured part as rest. Disagreeable and crippling though pain may be, it is a highly useful and defensive reaction on the part of the body; and whenever it arises because of injury or disease, all animals instinctively respond to it by using the affected part as little as possible. Primitive man learned that the fixing of a broken limb by splinting promoted and hastened repair of the wound. We may lay it down as an axiom that uncontrolled movement of a diseased or injured part (if this is possible) will promote spread of the disease and delay recovery from the disability.

Wherever we have what we call more local tuberculosis, in places which are available for the treatment, we apply rest directly. We splint the carious spine or hip joint with rigid casts, and thus limit motion to a minimum. In cases of tuberculosis of the larynx we interdict speaking above a whisper, as a result of which the vocal cords and surrounding structures are put at relative rest.

When they present themselves for treatment, persons with lung tuberculosis may suffer from every conceivable degree of illness and disability. At one end of the scale we may encounter the patient whose only manifestation of illness is a consciousness that he has increasing difficulty in performing his customary work; at the other, patients who are profoundly ill, with high fever, great prostration and rapid wasting. Between these two extremes are legions of men and women, not ill enough to feel themselves fit for bed, who tire easily—too easily—have a little fever and elevated and

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irritable pulse, find their food without its old savor, gradually lose weight, and perhaps suffer from a slight cough which hangs on with unusual tenacity. Cough, blood-spitting, fatigue or feeling out of sorts, may first send these to the physician, who, if disability is due to tuberculosis, usually finds more features of illness than the patient complains of.

And now begins the struggle to restore the patient to old-time vigor, and *keep him there.* For *it is a struggle. Every person who has enough lung tuberculosis to cause symptoms is saddled with a serious affliction and enters upon a battle for his life.* The earlier he realizes this fact and, acting accordingly, does his part, the more quickly he establishes a wholly cooperative attitude with a competent physician, yielding himself to a discipline and re-education which will be always prolonged, and, to the rebellious and flabby-charactered, irksome: the more readily he adjusts himself to a life and environment which involve the non-indulgence of many former habits and appetites, and the release and freedom from many activities which, though pleasurable, entailed strain, the more likely it is that he will win the fight and not die of consumption—soon, or many years thereafter, and after many false convalescences and relapses.

From infection to first illness, lung tuberculosis is a slowly creeping and insidious thing; between the two incidents the interval is probably more often years than weeks or months. Healing may not be so sluggish, but to many it will seem interminable.

It is of the first importance to rid the patient of the constitutional symptoms of intoxication —of fever, fatigue, loss of appetite, etc. Exercise may whet the appetite, relieve the fatigue and tone up the system of the man without organic disease; but it has never done the same for the consumptive *when and so long as he has such symptoms.* We should no more exercise a tired and feverish consumptive than work a worn horse.

Experience will prove to anyone that, except in cases of acute disease and very ill patients, there is no appetizer for the consumptive like rest; there is no restorer of aching, tired limbs like rest; there is no fever reducer like rest. And why? Fever, tiredness and distaste for food are, we repeat, symptoms of intoxication. Intoxication results from the absorption of focal substances, and its intensity and degree are commensurable with the amount of such substances absorbed. The rate and capacity of this absorption depend upon the circulatory and respiratory activities of the body. These latter again vary directly with bodily activity, any increase of which (exercise) raises pulse and blood pressure and breathing depth and rate. Rest, bringing about a diminution of physiological demands, tends to reduce the amount of focal absorption and thus lessen intoxication. As intoxication goes, appetite comes back, fever falls and a sense of well-being sets in.

When this happens, the body functions more normally in every way. It is able to build up its depleted reserves and better combat the infection, thus assisting all the more in the healing of foci of disease, the extension of which is rendered less likely because of the comparative physiological inactivity of the affected part.

Well regulated life in the open and a well-balanced diet are yeoman aids to rest in the general treatment of tuberculosis. Moving, fresh air stimulates bodily functions and good nutrition improves them. Exposure to the wearing and damaging influences of weather and climate will likely prove disastrous, while forced stuffing with milk and eggs, beyond the demands of appetite and satisfactory gains in weight on more normal diet, delays rather than hastens cure.

Rest is really a potent medicine, to be prescribed and "dosed out" only according to the requirements of each individual case and with discretion, by physicians who understand its use. Discipline, regulation of life, is really the keynote to success in treatment—with rest always the basis. Consumption *can* be treated successfully anywhere—anywhere where freedom from bodily and mental stress is possible and prevails. But, since rest and discipline and the means for ensuring these are more readily obtainable in special institutions or health resorts than in an environment of anxious, over-critical and perhaps suffering relatives and friends, sanatorium treatment is vastly more satisfactory and effective for the great majority of patients.

Many drugs are valuable in combating and relieving particular symptoms of lung tuberculosis: none affect it fundamentally. The various specific products of the bacillus—*tuberculins*—have done not a little good in one or two very special types of cases, *but only the thoroughly trained physician, experienced in their use, should administer them.* Sunlight and various other forms of radiation, in the hands of experts, are apparently exerting a very favorable influence in the more superficial types of tuberculosis; in lung tuberculosis they have yet to win their place. Yet drugs, tuberculins, and sunlight and irradiation would not show much effect if at the same time rest was not part of the treatment; that is, the patient allowed to go his own way, with life unregulated and activities unrestrained, would in most cases "crumble" nevertheless.

Treatment by artificial pneumothorax involves the direct application of rest to the diseased lung. The injection of an inert gas, like nitrogen, into the chest cavity, under higher pressure than the lung can expand against, brings about a condition which compresses the lung, and fixes it and makes the rhythmic movements of breathing impossible. It is a measure to employ in selected cases, in which less drastic treatment, like bodily rest, has failed to arrest the disease. It has saved many patients, and ameliorated and prolonged the lives of many more. First suggested by an Italian forty years ago, and vigorously advanced by an American almost twenty-five years ago, it has, during the last decade, grad-

ually won recognition as the one effective weapon against advanced pulmonary tuberculosis, which the period since the discovery of the tubercle bacillus (1882) has disclosed.

When the treatment of lung tuberculosis is successful, the foci of disease either disappear or are replaced by scar tissue, or they are surrounded by thick, globular envelopes of scar tissue, which prevent the egress of bacilli remaining within and make impossible the absorption of focal materials. In most patients who recover, the latter event very likely occurs.

As long as living bacilli remain in the body, in such walled-off tubercles, the possibility remains that active disease can again flare up. And it is a lamentable fact that only too many who have recovered from one or more attacks of tuberculosis relapse.

Most break down again because they cannot withstand the strain of the life to which they return after treatment. They cannot or will not continue the regulated life that restored their health, and sooner or later they "crack."

This event is so common that the conscientious and wise practitioner insists upon the continuance of a modified treatment long after the patient has left his intimate care. He insists that the patient carry back to active life some of the maxims learned at the sanatorium; that he so regulate his affairs that he can always live with as little strain and fatigue as possible—for fatigue is his danger signal: that what is work for a normal man requires longer and more complete intervals of rest for him who was once a tuberculous patient; that overindulgence in any activity, while fatiguing to the healthy, may precipitate the relapse of a former tuberculous patient. Many patients, amenable to this advice, escape relapse. Most who are forgetful of it return —always a little worse off than before—to resume the "cure."

A man who has had active tuberculosis, who has recovered, and who returns to take his former place in society is "like a man with one leg trying to run a race with a man with two"; and he should arrange his life accordingly. A tremendous lot of the world's work has been done by men with tuberculosis or by those who were often on the brink of active disease—by Spinoza, John Locke, Chopin, Keats, Sterne, Raphael, Moliere, Canova, Schiller, Laennec, Emerson, Cecil Rhodes, and a host of others. But most of these had to do one of two things: either "put all their eggs in one basket" and live by rule to fairly mature and even old age, or seize the passing moment and burn themselves out in youth to leave imperishable monuments behind them.